Fact Sheet

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The United States Environmental Protection Agency (EPA)
Plans To Reissue A National Pollutant Discharge Elimination System (NPDES) Permit to each of the following facilities:

Facility	NPDES Permit Number
City of Bonners Ferry Water Treatment Plant	ID-0020451
City of Sandpoint Sand Creek Water Treatment Plant	ID-0024350
Laclede Water District Water Treatment Plant	ID-0027944
City of Lewiston Water Treatment Plant	ID-0026531
City of Pierce Water Treatment Plant	ID-0020893
City of Orofino Water Treatment Plant	ID-0001058
Riverside Independent Water District Water Treatment Plant	ID-0021237
City of Weiser Water Treatment Plant	ID-0001155

And issue an NPDES permit to the following facility:

Facility	NPDES Permit Number
Wilderness Ranch Water Treatment Plant	ID-0028312

The United States Environmental Protection Agency (EPA) Plans to reissue the NPDES permits to the facilities referenced above. The draft permits place conditions on the discharge of pollutants from Water Treatment Plants (WTPs) to waters of the United States within the State of Idaho. In order to ensure protection of water quality and human health, the permits place limits on the types and amounts of pollutants that can be discharged from each facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a description of the industry
- a listing of proposed effluent limitations and other permit conditions for each facility
- technical material supporting the conditions in the permit

State and Tribal Certification
EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for those facilities that discharge to state waters, under section 401 of the Clean Water Act. All of the facilities referenced above, except for the City of Orofino WTP and the Riverside Independent Water District WTP, discharge to State waters. The City of Orofino and the Riverside Independent Water District WTPs are located on the Nez Perce Reservation; therefore the EPA will certify those permits.

Public Comment
Persons wishing to comment on, or request a Public Hearing for the draft permits for any of these facilities may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's Regional Director for the Office of Water will make a final decision regarding permit reissuance. If no substantive comments are received, the tentative conditions in the draft permits will become final, and the permits will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permits will become effective 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days.

Documents are Available for Review
The draft NPDES permits, fact sheet, and related documents can be reviewed or obtained by visiting or contacting the EPA's Operations Office in Boise between 8:30 a.m. and 4:00 p.m. (Mountain Time), Monday through Friday at:

United States Environmental Protection Agency Region 10
Idaho Operations Office
1435 North Orchard Street
Boise, Idaho 83706
(208) 378-5757

The draft permits and fact sheet are also available for inspection and copying at the following federal and State offices:

U.S. Environmental Protection Agency Region 10
1200 Sixth Avenue, OWW-130
Seattle, Washington 98101
206/553-0523 or
1-800-424-4EPA (within Alaska, Idaho, Oregon and Washington)

Idaho Department of Environmental Quality
State Office
1410 North Hilton
Boise, Idaho 83706

208/373-0502

Idaho Department of Environmental Quality
Boise Regional Office
1445 North Orchard
Boise, Idaho 83706-2239
208/373-0550
(WTP permits for Weiser and Wilderness Ranch)

Idaho Department of Environmental Quality
Lewiston Regional Office
1118 F St.
Lewiston, Idaho 83501
208/799-4370
(WTP permits for Lewiston and Pierce)

Idaho Department of Environmental Quality
Coeur d'Alene Regional Office
2110 Ironwood Pkwy
Coeur d'Alene, Idaho 83814
208/769-1422
(WTP permits for Sandpoint, Bonners Ferry, and Laclede)

The draft permit, fact sheet, and other information can also be found by visiting the Region 10 website at www.epa.gov/r10earth/waterpermits.htm.

For technical questions regarding the permits or fact sheet, contact Susan Poulsom at the phone number or e-mail at the top of this fact sheet.

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Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
AML	Average Monthly Limit
APA	Administrative Procedures Act
AWL	Average Weekly Limit
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BE	Biological Evaluation
BMP	Best Management Practices
BPJ	Best Professional Judgment
BPT	Best Practicable Technology Currently Available
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ELGs	Effluent Limitations Guidelines
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FR	Federal Register
GP	Permits
gpd	Gallons per day
gpm	Gallon per minute
HUC	Hydrologic Unit Code
IDEQ	Idaho Department of Environmental Quality

lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
Ml	Milliliters
ML	Minimum Level
µg/L	Micrograms per liter
Mgd	Million gallons per day
MDL	Maximum Daily Limit
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
PCS	Permit Compliance System
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
SDWIS	Safe Drinking Water Information System
SIC	Standard Industrial Classification
SS	Suspended Solids
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
THMs	Total Trihalomethanes
TTHMs	Total Trihalomethanes
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WTPs	Water Treatment Plants

I. APPLICANTS

This fact sheet provides information on the draft NPDES permits for nine conventional filtration water treatment plants in Idaho. The permits will provide CWA authorization for the discharge from these water treatment plants to waters of the United States within the State of Idaho including those that discharge to tribal waters. These discharges consist primarily of treated filter backwash and filter-to-waste.

Applicants:

City of Bonners Ferry WTP
7232 Main Street
PO Box 149
Bonners Ferry, ID 83805

City of Orofino WTP
P.O. Box 312
Orofino, ID 83544

City of Sandpoint Sand Creek WTP
1123 Lake Street
Sandpoint, ID 83864

Riverside Independent Water District WTP
10460 Hwy 12
Orofino, ID 83544

Laclede Water District WTP
P.O. Box 222
Laclede, ID 83841

City of Weiser WTP
55 West Idaho Street
Weiser, ID 83672

City of Lewiston WTP
P.O. Box 617
Lewiston, ID 83501

Wilderness Ranch WTP
46 Wilderness Ranch Road
Boise, ID 83716

City of Pierce WTP
P.O. Box 356
Pierce, Idaho 83546

The NPDES permit for Wilderness Ranch is a new permit. All other permits are being reissued. The previous permits for these facilities were issued in the 1970's. Because the permittees submitted timely applications for renewal, the previous permits were administratively extended and remain fully effective and enforceable until reissuance.

II. Background Information

A. Description of WTP Processes

The traditional water treatment plant is used to remove turbidity and pathogenic organisms. WTPs may also be used to remove color, taste, odor, iron, manganese, hardness, total dissolved solids, nitrates, arsenic, and radionuclides. With some exceptions, the National Primary Drinking Water Regulations (40 CFR Part 141) require public water systems using a surface water source or a ground water source under the direct influence of surface water to provide treatment consisting of filtration and disinfection.

The specific water treatment processes used vary depending on the quality of the source water as well as other factors such as the size of the system, technical complexity, costs, etc. Common unit processes include presedimentation, coagulation/flocculation, sedimentation/precipitation, filtration, membrane separation, and oxidation. "Conventional filtration plant" refers to a treatment train of chemical feed, rapid mix, flocculation, sedimentation, and filtration. Common variations of filtration include direct filtration or in-line filtration.

Presedimentation is often used with raw waters that contain relatively high concentrations of suspended solids such as sand and silt. Presedimentation basins provide adequate detention time to allow the coarser particles to settle. Most presedimentation basins are designed either for continuous sludge removal or have provisions for frequent sludge removal. The solids may be disposed of separately as a solid waste or may be washed into the same wastestream as the backwash.

Coagulation and flocculation followed by sedimentation and filtration are used to separate fine particles and colloidal materials from water. Colloids or fine particles in suspension either have or acquire electrical charges on their surfaces. In the process of coagulation, coagulants are added to destabilize the colloidal state of suspended particles through "charge neutralization" allowing the particles to adhere to each other. During flocculation, the chemically treated water is sent into a basin where the suspended particles can collide and form heavier particles called floc. The most common coagulant is aluminum sulfate (alum), $Al_2(SO_4)_3 \cdot 14H_2O$. Another coagulant is ferric chloride, $FeCl_3$. Other additives may include compounds to adjust pH (e.g. soda ash and sodium hydroxide) and polymers to enhance coagulation, flocculation, and filtration.

In sedimentation, the velocity of water is decreased so that suspended material (including flocculated particles) can settle out of the water stream by gravity. Once settled, the particles combine to form a sludge that is later removed from the clarified supernatant (the liquid removed from settled sludge).

Filtration is the process of removing suspended solids from water by passing the water through a permeable fabric or porous bed of materials. Common filtration methods used in the water treatment industry in Idaho include:

- Conventional filtration – Conventional filtration includes chemical coagulation, rapid mixing, and flocculation, followed by floc removal via sedimentation (or flotation). The clarified water is then filtered. Common filter media designs include sand, dual-media, and trimedia.
- Direct filtration – A variation of conventional filtration, used with influent water with less turbidity, the coagulation and flocculation step is followed immediately by filtration.
- In-line filtration – Same as direct filtration, but also omits the flocculation step.

Oxidation is a common process used for iron and manganese removal. The oxidant chemically oxidizes the iron or manganese, forming a particle. The filter then removes the iron or manganese particles. Before iron and manganese can be filtered, they need to be oxidized to a state in which they can form insoluble complexes. The most common chemical oxidants in water treatment are chlorine, chlorine dioxide, potassium permanganate, and ozone.

In addition to its use as an oxidant, chlorine is frequently added after filtration for disinfection purposes, producing the "finished water" for distribution as drinking water. This chlorinated finish water is typically used to backflush the filters.

B. Generation of Wastestreams

The principle wastewaters produced in filtration water treatment plants include filter backwash, filter-to-waste, thickener supernatant, and liquids from dewatering processes. Filter backwash and filter-to-waste account for most of the volume of wastewater discharged.

Filter Backwash

Filter media is usually cleaned by flushing with water in the reverse direction to normal flow, with sufficient force to separate particles from the media. A typical backwashing operation lasts for 10 to 25 minutes with maximum rates of 15 to 20 gallon per minute (gpm) per square foot. Because a high water flow is used, a large volume of filter backwash water is produced in a relatively short amount of time. Small plants may produce spent filter backwash sporadically; but larger plants with numerous filters may produce backwash continuously as filters are rotated for backwashing. Spent filter backwash can comprise 2 to 10 percent of the total plant production of finished water. The quality of spent filter backwash varies from plant to plant. Filter backwash may contain chlorine, if the facility backwashes with chlorinated water. Relative to raw water, spent backwash shows higher concentrations of *Giardia Lamblia* and *Cryptosporidium*, dissolved organic carbon, zinc, total trihalomethanes (TTHMs), turbidity, total organic carbon and total suspended solids (TSS). In addition, filter backwash may have higher concentrations of aluminum and iron (from aluminum and iron based coagulants). The average TSS concentrations of spent filter backwash typically fall within the range of 50 to 400 mg/L.

Filter-to-Waste

Filter-to-waste is generated by filters immediately after being placed back on-line following backwashing. The filter-to-waste is not considered to be of a quality that can be sent directly into the water distribution system, but is a fairly clean waste stream. It amounts to approximately 0.5 percent of the total amount of water filtered. At some WTPs, the filter-to-waste is returned to the head of the plant.

Thickener Overflows (Supernatant)

Thickener supernatant results from gravity thickening of solids in sedimentation basins, backwash holding tanks, lagoons, and other similar units. After settling, the clarified or decant water that exits the unit is called thickener supernatant. The quantity of sedimentation basin thickener supernatant is approximately 75 to 95 percent of the volume of sludge produced; and sludge volumes are typically 0.1 to 3 percent of the plant flow. Thickener supernatant may be recycled or discharged at a frequency that depends on the quantity of sludge produced. Microbial, inorganic, and organic contaminants that concentrate in the sludges can remain in the supernatant, if sludge is not properly settled, treated, and/or removed.

Decant Water

Some filtration plants prepare waste solids for disposal by concentrating solids to remove excess water, thereby reducing the volume of waste for disposal. Such processes concentrate sludges as high as 50 percent solids content. Liquids from dewatering processes are produced from a lagoon or sludge drying bed as decant and underflow, or as filtrate or centrate from mechanical processes. Small, intermittent wastewater streams are produced as a result of the dewatering process. Such waste streams can contain elevated levels of turbidity, TOC, TTHMs, as well as aluminum, iron, and manganese.

C. Treatment of Wastestreams

Treatment of wastestreams from WTPs may include settling ponds, mechanical clarification/sludge thickening and dewatering. Most of the conventional filtration plants in Idaho use a settling pond to allow quiescent settling prior to discharge.

III. Receiving Waters

A. General

Receiving waters are waters of the United States within the geographical boundaries of the State of Idaho. Specific receiving water information for each of the facilities is provided in Appendix A.

B. Low Flow Conditions

Flow information from the United States Geological Survey (USGS) was used to determine the flow conditions for each of the receiving waters. Where data were available, the 1 day, 10 year low flow (1Q10) and the 7 day, 10 year low flow (7Q10) were calculated for each facility. Low flow conditions are used to do reasonable potential analyses and to calculate water quality based effluent limits (see Appendix C and Appendix D).

C. Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Federal regulations at 40 CFR § 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States/Tribes. A State/Tribe's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses (such as drinking water supply, contact recreation, and aquatic life) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State/Tribe to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

Some of the facilities discharge to Tribal waters for which the Tribe has not yet adopted water quality standards. In this case, EPA's practice is to apply adjacent or downstream

standards to the water body for the purpose of developing permit limitations and conditions. Therefore, the State of Idaho's water quality standards were applied to these permits.

D. Beneficial Uses

The beneficial uses for many surface waters in Idaho are contained in IDAPA 58.01.02 Sections 110 – 160. Surface waters that are not designated in these sections are protected for cold water aquatic life and primary or secondary contact recreation. Because the receiving waters contemplated by the permits include all possible use designations and are subject to all possible water quality criteria, EPA has established effluent limitations and other requirements of the permits to maintain the most stringent possible water quality criteria. In this manner, the permits will be protective of all possible receiving water uses.

E. Water Quality Criteria

Numeric water quality criteria are presented in Sections 200 through 299 of IDEQ's Water Quality Standards (IDAPA 58.01.02). In addition to numeric criteria, IDEQ has general water quality criteria (IDAPA 58.01.02.200) that apply to all surface waters of the state. These criteria address hazardous materials; toxic substances; deleterious materials; floating, suspended; submerged matter; excess nutrients; oxygen-demanding materials; radioactive materials; and sediment. The typical discharge from these facilities is not expected to contain any pollutants of concern besides those that have been identified and discussed in this fact sheet. The permits do contain language for narrative criteria below.

Toxic Substances. Surface waters of the State shall be free of toxic substances in concentrations that impair designated beneficial uses. These substances do not include suspended sediment produced as a result of nonpoint source activities.

Deleterious. Surface waters of the State shall be free of deleterious materials in concentrations that impair designated beneficial uses. These materials do not include suspended sediment produced as a result of nonpoint source activities.

Floating, Suspended, or Submerged Matter. Surface waters of the State shall be free of floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. This matter does not include suspended sediment produced as a result of nonpoint source activities.

F. Impaired Waters / TMDLs

Section 303(d) of the CWA requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations by point sources. For all 303(d)-listed water bodies and pollutants, states must develop and adopt TMDLs that will specify wasteload allocations for point sources and load allocations for non-point sources, as appropriate. EPA is responsible for issuing TMDLs for Tribal waters.

EPA has approved the IDEQ's 2002 303(d) list of impaired water bodies. Certain receiving waters in the State do not fully support beneficial uses and therefore have been classified as impaired on the State's 303(d) list and have been scheduled for TMDL development.

The TMDL allocations for point sources are "wasteload allocations" (WLAs) and are implemented through limits incorporated in NPDES permits. The Snake River – Hells Canyon TMDL was approved by EPA in September 2004. The TMDL contains WLAs for the Weiser WTP. The TMDL documents are available on the IDEQ website at:

http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/snake_river_hells_canyon/snake_river_hells_canyon.cfm

Additional discussion on the TMDL as it applies to the Weiser WTP is provided in Appendix E. Because the facility discharges to impaired waters and there is an EPA-approved TMDL for receiving waters, additional effluent limits and monitoring requirements apply to the Weiser WTP (see Section IV).

IV. Effluent Limitations

A. General Approach to Determining Effluent Limitations

Sections 101, 301, 304, 308, 401, 402, and 403 of the CWA provide the basis for effluent limitations and other conditions in the permits. EPA has evaluated possible discharges from water treatment plants with respect to these sections of the CWA and relevant NPDES implementing regulations to determine what conditions and requirements to include in the permits.

In general, the CWA requires effluent limits that are the more stringent of either technology-based or water quality-based limitations. Technology-based effluent limits are based on a minimum level of treatment for point sources provided by currently available treatment technologies. Water quality-based effluent limits (WQBELs) are developed to ensure that applicable water quality standards for receiving waters are met. The derivation of technology and WQBELs of the draft permits are described in greater detail in Appendices A and B of this Fact Sheet.

B. Anti-Degradation Policy

In setting permit limitations, EPA must consider the State/Tribe's antidegradation policy. This policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality just meets the standard. For high quality waters, antidegradation requires that the State/Tribe finds that allowing lower water quality is necessary to accommodate important economic or social development before any degradation is authorized. This means that, if water quality is better than necessary to meet the water quality standards, increased permit limits can be authorized only if they do not cause degradation or if the State/Tribe makes the determination that it is necessary.

Because the effluent limits in the draft permits are based on current water quality criteria or technology-based limits that have been shown to not cause or contribute to an exceedance of water quality standards, the discharges as authorized in the draft permits do not result in degradation of the receiving waters. In addition, the effluent limits are more stringent than those in the current individual permits. Therefore, the conditions in the permits will comply with the State/Tribe's antidegradation requirements.

C. Evaluation of Technology-Based Limitations

To date, EPA has not established, pursuant to Section 301(b) of the CWA, technology-based Effluent Limitation Guidelines (ELGs) or standards of performance applicable to discharges from water treatment plants. In such circumstances, where ELGs have not been developed, EPA relies on best professional judgment (BPJ), pursuant to Section 402(a)(1) of the CWA, to establish technology-based effluent limits on a case-by-case basis. Such limits must be established based on best available technology economically achievable (BAT) for toxics and non-conventional pollutants and best conventional pollutant control technology (BCT) for conventional pollutants and take into consideration the factors presented at 40 CFR § 125.3(d)(2) for BCT and at 40 CFR § 125.3(d)(3) for BAT. Therefore, and as provided in Section 402(a)(1) of the Act, EPA is establishing technology-based effluent limits in the permits utilizing BPJ to meet the requirements of BCT/BAT. The draft permits include technology-based effluent limitations for TSS.

Note that, EPA has selected the "drinking water treatment point source category" as a candidate for effluent guidelines rulemaking. At this time, EPA has made no decisions about whether any discharge controls are necessary for residuals produced by drinking water treatment facilities. Additional information on this rulemaking may be found at: http://www.epa.gov/waterscience/guide/dw/

D. Evaluation of Water Quality-Based Effluent Limitations

Section 301(b)(1)(C) of the CWA and implementing regulations at 40 CFR § 122.44(d) require permits to include limits for all pollutants or parameters which are or may be discharged at a level which will cause, or contribute to an excursion above any State/Tribe water quality standard, including State/Tribe narrative criteria for water quality. If such WQBELs are necessary, they must be stringent enough to ensure that water quality standards are met, and they must be consistent with any available waste load allocation. For pollutants with technology-based limits, EPA must also determine whether the technology-based limits will be protective of the corresponding water quality criteria. The draft permits include WQBELs for pH and chlorine. Appendix B provides a discussion of the steps involved in developing WQBELs for total residual chlorine.

E. Summary of Effluent Limitations and Requirements

The following summarizes the effluent limitations of the draft permits that are in the draft WTP permits.

1. pH. The pH must not be less than 6.5 or greater than 9.0 standard pH units.

2. Chlorine. Each draft permit includes average monthly and maximum daily chlorine concentration limits (in units of mg/L), and average monthly and maximum daily chlorine loading limits (in units of lbs/day). Chlorine limits are based on available dilution in the receiving water. The chlorine limits for these facilities are listed in Appendix D.

Loading (in lbs/day) is calculated for each facility as:

Loading = concentration (in mg/L) * effluent design flow (in mgd) * 8.34

where, 8.34 is a conversion factor.

In some cases, the effluent concentration limit for chlorine is not quantifiable using EPA approved methods. In these cases, EPA will use the minimum level (ML) of 0.1 mg/L as the compliance evaluation level.

3. TSS. Table 1, below presents the effluent limits for TSS.

Table 1 TSS Effluent Limitations			
Concentration (mg/L)		**Mass-Based Loading (lbs/day)**	
Average Monthly Limit	**Maximum Daily Limit**	**Average Monthly Limit**	**Maximum Daily Limit**
30	45	Calculated Value[1]	Calculated Value[1]
1. The loading limits are calculated for each facility by the following formula: pounds per day limitation = concentration limit (mg/L) x facility effluent design flow (mgd) x 8.34 (conversion factor).			

4. Narrative. The draft permits includes narrative effluent limitations for toxic substances; deleterious materials; and floating, suspended, and submerged matter; which reflect applicable State water quality criteria applied directly as end-of-pipe limitations.

5. Phosphorus. The City of Weiser WTP has phosphorus limits consistent with the EPA-approved Snake River- Hells Canyon TMDL. These limits are presented in Table 2.

Table 2 Phosphorus Effluent Limitations for Weiser WTP			
Concentration (mg/L)		**Mass-Based Loading (lbs/day)**	
Average Monthly Limit	**Maximum Daily Limit**	**Average Monthly Limit**	**Maximum Daily Limit**
1.75	3.5	6.1	12

F. Monitoring and Reporting Requirements

Section 308 of the CWA and federal regulation 40 CFR § 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for renewal, as appropriate, to the EPA.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR Part 136) and if the Method Detection Limits are less than the effluent limits.

Table 3 presents the effluent monitoring requirements. In addition, the City of Weiser WTP must conduct phosphorus monitoring shown in Table 4. Monitoring is required once per year. The Weiser WTP does not add phosphorus as part of the water treatment plant process. Any phosphorus in the discharge is from the source water.

The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 3 Effluent Monitoring

Parameter	Units	Monitoring Frequency	Type of Sample
Outfall Flow	gpd	Continuous[1]	----
pH	pH units	Weekly	Grab
TSS	mg/L	Monthly	Composite
Chlorine[2]	mg/L	Weekly	Grab
Metals[3,4]	µg/L	Annually	Composite
TTHMs[4,5]	µg/L	Annually	Grab
Turbidity	NTUs	Monthly	Grab
Aluminum	µg/L	Annually	Composite
Temperature	°C	Weekly	Grab

1. Report average monthly and maximum daily gallons per day (gpd)
2. Chlorine monitoring is only required for those facilities that use chlorine in the treatment process.
3. Analyses for the thirteen metals (identified as Compound Nos. 1 – 13 by the National Toxics Rule at 40 CFR § 131.36).
4. Sampling required during first three years of coverage only.
5. Analysis for chloroform, chlorodibromomethane, dichlorobromomethane, and bromoform.

Table 4 Additional Effluent Monitoring for Weiser WTP

Parameter	Units	Monitoring Frequency	Type of Sample
Total Phosphorus	mg/L	Annually[1]	Grab

1 Collected in July.

V. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR § 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The permittees are required to develop and implement a Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and made available to EPA upon request and IDEQ or Tribe, as applicable, upon request.

B. Best Management Practices

Section 402 of the Clean Water Act and federal regulations at 40 CFR § 122.44(k)(2) and (3) authorize EPA to require best management practices (BMPs) in NPDES permits. BMPs are measures that are intended to prevent or minimize the generation and the potential for release of pollutants from industrial facilities to waters of the U.S. These measures are important tools for waste minimization and pollution prevention.

The draft permits require dischargers to develop and implement a BMP Plan within 6 months of becoming authorized to discharge under its terms. Dischargers must identify and assess potential impacts of pollutant discharges and identify specific management practices and operating procedures to prevent or minimize the generation and discharge of pollutants. The BMP Plan must also address several specific objectives.

The BMP Plan must be amended whenever there is a change in the facility or its operation that materially increases the potential for an increased discharge of pollutants.

C. Standard Permit Provisions

Section IV of the draft permits contains standard regulatory language that is required in all NPDES permits (40 CFR §122.41). Because it is based on regulations, the standard regulatory language cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and general requirements.

VI. Other Requirements

A. Endangered Species Act

The Endangered Species Act at 16 U.S.C. § 1536 requires EPA to consult with the appropriate agencies of the Department of Interior, Department of Commerce, and/or Department of Agriculture to insure that this NPDES permitting activity will not jeopardize the continued existence of any endangered or threatened species, or of any species proposed to be listed as endangered or threatened, or result in the destruction or adverse modification of critical habitat for such species. To address the requirements of the Endangered Species Act, EPA has prepared a biological evaluation (BE). The summary of the BE is provided as Appendix D.

B. State/Tribal Certification

Section 401 of the Clean Water Act requires EPA to seek certification from States and Tribes, with Treatment as a State, that the permits are adequate to meet State/Tribal water quality standards before issuing the final permit. The Federal regulations at 40 CFR § 124.53 allow for the State/Tribe to stipulate more stringent conditions in the permit, if the certification sites the Clean Water Act or state law upon which that condition is based. In addition, the regulations require that the State/Tribal certification include statements on the extent to which each condition of the permit can be made less stringent without violating the requirements of State/Tribal law.

Some of the facilities discharge to Tribal waters for which the Tribe has not yet adopted water quality standards. The EPA will conduct the 401 certification of these permits.

C. Permit Expiration

These permits will expire five years from the effective date. If a permit is not reissued before its expiration date, the conditions of the expired permit will continue in force until the effective date of a new or reissued permit. (40 CFR § 122.6)

Appendix A Basis for Effluent Limitations

A. Statutory and Regulatory Basis for Limits

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the CWA provide the basis for effluent limitations and other conditions in the draft permit. EPA evaluates the discharges with respect to these sections of the CWA and the relevant NPDES regulations to determine which conditions to include in the draft permits.

In general, EPA first determines which technology-based limits must be incorporated into the permits. EPA then evaluates the technology-based limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the limits are not adequate, EPA must develop additional water quality-based limits. These limits are designed to prevent exceedances of Idaho's water quality standards in the receiving water. The draft permits will include whichever limits (technology-based or water quality-based) are more stringent.

B. Technology-Based Evaluation

Where EPA has not yet developed effluent limitation guidelines, pursuant to Section 301(b) of the CWA, for a particular industry or a particular pollutant, technology-based limitations must be established using BPJ (40 CFR § 122.43, 12.44, and 125.3). Because there are no ELGs developed by EPA for discharges from the water treatment industry, technology-based effluent limitations must be based on BPJ.

C. Water Quality-Based Evaluation

In addition to the technology-based limits discussed above, EPA evaluated the potential discharges to determine compliance with Section 301(b)(1)(C) of the CWA and implementing regulations at 40 CFR § 122.44(d), which require permits to include limits for all pollutants or parameters which are or may be discharged at a level which will cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality. The limits must be stringent enough to ensure that water quality standards are met and must be consistent with any available waste load allocation (WLA).

EPA must also consider the State/Tribe's antidegradation policy. At IDAPA 58.01.02.051, IDEQ requires that existing in stream water uses and the level of water quality necessary to protect those existing uses be maintained and protected. Where the quality of waters exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water, that quality must also be maintained and protected. The draft permits will not result in the relaxation of effluent limits and will maintain or improve the quality of effluent discharged from water treatment plants in Idaho; and therefore, it will not result in degradation of water quality and is consistent with Idaho's antidegradation policy.

The sections below provide a discussion of the steps involved in developing water WQBELs. Appendix B shows the derivation of specific WQBELs for the draft permits.

1. Water Quality Criteria

   Uses of receiving water are defined by IDEQ at IDAPA 58.01.02.100 through IDAPA 58.01.02.200 and can include aquatic life uses, recreational uses, water

supply uses, wildlife habitat, and aesthetics. Applicable water quality criteria are presented at IDAPA 58.01.02.200 through 299. To protect all beneficial uses, limitations of the permits are based on the most stringent of the water quality criteria applicable to all possible beneficial uses.

2. Mixing Zones

Mixing zones are defined as a limited area or volume of water where the discharge plume is progressively diluted by the receiving water. Water quality criteria may be exceeded in the mixing zone as long as acutely toxic conditions are prevented from occurring and the applicable existing designated uses of the water body are not impaired as a result of the mixing zone. Mixing zones are allowed at the discretion of the State/Tribe, based on the State/Tribe water quality standards regulations.

The Idaho water quality standards at IDAPA 58.01.02.060 allow for the use of mixing zones after a biological, chemical, and physical appraisal of the receiving water and the discharge. The standards allow water quality within a mixing zone to exceed chronic water quality criteria so long as chronic water quality criteria are met at the boundary of the mixing zone. Acute water quality criteria may be exceeded within a zone of initial dilution inside the chronic mixing zone. In accordance with state water quality standards, only IDEQ may authorize mixing zones in state waters.

If IDEQ authorizes a different-sized mixing zone for a facility in its final 401 certification, EPA will recalculate the effluent limits based on the final mixing zones. If the State does not authorize a mixing zone in its 401 certification, EPA will recalculate the limits based on meeting water quality criteria at the point of discharge (i.e., “end-of-pipe” limits).

3. Wasteload Allocation (WLA) Development

A WLA must be developed to establish the allowable loading of each pollutant that may be discharged without causing or contributing to exceedances of water quality standards in the receiving waters. WLAs can be established in three ways: mixing zone-based WLAs, TMDL-based WLAs, and end-of-pipe WLAs.

a. Mixing Zone-Based WLA

When IDEQ authorizes a mixing zone for a discharge, the WLA is calculated based on the available dilution, background concentrations of pollutants, and the water quality criteria.

b. TMDL-Based WLA

Where the receiving water quality does not meet water quality standards, the wasteload allocation (WLA) is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources, including a margin of safety, that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

Section 303(d) of the CWA requires states to develop TMDLs for water bodies that will not meet water quality standards after the imposition of technology-based effluent limitations to ensure that these waters will come into compliance with water quality standards. The first step in establishing a TMDL is to determine the assimilative capacity of the waterbody (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

The State has completed a TMDL for the Snake River which provides the Weiser WTP with a WLA for phosphorus and sediment. The TMDL also includes a temperature WLA for the City of Weiser point source, which could also include the wastewater treatment plant and storm water.

c. End-of-Pipe WLA

In these circumstances, where WLAs cannot be determined based on TMDLs or based on a mixing zone, the applicable water quality criteria are applied as end-of-pipe WLAs.

4. Permit Limit Derivation

Once the WLA has been developed, EPA applies the statistical methodology described in Chapter 5 of the Technical Support Document for Water Quality-Based Toxics Control (TSD), EPA Office of Water (1991) (EPA/505/2-90-001) to establish maximum daily and average monthly permit limitations (MDL and AML, respectively). This approach takes into account effluent variability, sampling frequency, water quality standards, and the difference in time frames between the monthly average and the daily maximum limits.
The daily maximum limit is based on a coefficient of variation (CV) and a probability basis, while the monthly average limitation is dependent on these two variables and the monitoring frequency. As recommended by the TSD, EPA has used a probability basis of 95 percent for the monthly average limit calculation and 99 percent for the daily maximum limit calculation. EPA has assumed a CV of 0.6 for both monthly average and daily maximum calculations.

D. Pollutant-Specific Analysis

This discussion describes the basis for each of the technology-based or water quality-based effluent limitations in the draft permit.

Total Chlorine Residual

There are no applicable technology-based effluent guidelines for chlorine residuals in discharges from water treatment plants. The State of Idaho, however, has established applicable water quality criteria of 0.019 µg/L and 0.011 µg/L total chlorine residual for acute and chronic concentrations, respectively, for the protection of aquatic life.

Because of the common use of chlorine for disinfection in water treatment plants, EPA has determined that there is reasonable potential for wastewater discharges from water treatment plants to cause an exceedance of the numeric criteria. Therefore, following methods presented in the *TSD*, WQBELs for total chlorine were developed to be protective of water quality criteria. These limitations are included in the draft permits. Limits for individual facilities are dependent on the dilution available in the receiving water.

Based on Best Professional Judgment, EPA has established the following technology-based effluent limits for chlorine: 0.5 mg/l (maximum daily limit) and 0.3 mg/L (average monthly limit).

pH

There are no applicable technology-based effluent guidelines for pH in discharges from water treatment plants; however, at IDAPA 58.01.02.250, the State has established applicable water quality criteria for pH in receiving waters of 6.5 to 9.0. To assure protection of the applicable water quality criteria, the pH range of 6.5 to 9.0 is being established as an end of pipe discharge limitation by the draft permits.

Trihalomethanes

There are no applicable technology-based effluent guidelines for trihalomethanes in discharges from water treatment plants. The State of Idaho, however, has established the following applicable water quality criteria for protection of human health for each of the four common trihalomethanes.

Table A- 1 Trihalomethanes Human Health Criteria

	Human Health Criteria (IDAPA 58.01.02.210)	
Trihalomethane	**Consumption of Water and Organisms – µg/L**	**Consumption of Water Only – µg/L**
Chloroform	5.7	470
Chlorodibromomethane	0.41	34
Dichlorobromomethane	0.27	22
Bromoform	4.3	360

Although chlorine is commonly used for disinfection in water treatment plants, and literature suggests that trihalomethanes (THMs) can be elevated in water treatment plant residuals, reported levels are widely variable, and there is no actual data available for a determination of reasonable potential for plants in Idaho. Therefore, the permits do not include effluent limitations for THMs, but do require monitoring. This information will be used to conduct reasonable potential analysis for THMs during development of the next permit.

Turbidity

There are no applicable technology-based effluent guidelines for turbidity in discharges from water treatment plants. At IDAPA 58.01.02.252, however, IDEQ has established water quality criteria for turbidity for waters designated for domestic water supply, that prohibits increases of 5 NTUs or more in receiving waters that have background turbidity of 50 NTUs or less, and increases of 10 percent above background (not to exceed 25 NTUs) are prohibited, when background turbidity is greater than 50 NTUs.

EPA has determined that limitations applied to TSS in discharges from WTPs will also control, to a great extent, the levels of turbidity in these discharges. In addition, because no data is available describing turbidity levels in discharges from the WTPs for a determination of reasonable potential, the draft permits do not include effluent limitations for turbidity, but does require monitoring. This information will be used to conduct reasonable potential analysis for turbidity during development of the next permit.

Total Suspended Solids

There are no applicable technology-based effluent guidelines for suspended solids in discharges from water treatment plants. For wastewaters authorized by the permits, EPA is establishing TSS effluent limits of 30 mg/L (average monthly limit) and 45 mg/L (maximum daily limit). EPA is establishing these technology-based effluent limits in the permits utilizing BPJ to meet the requirements of BCT/BAT. (see Part IV.C).

Existing individual permits for water treatment plants in Idaho have limits of 30 mg/ and 45 mg/L (monthly average and daily maximum). The facilities have been in compliance with these limits. In establishing the TSS limitations for the permits, EPA is also relying on research performed for the EPA in 1987. (SAIC, Model Permit Package for the Water Supply Industry, EPA Contract No. 68-01-7043) This study considered sedimentation lagoons as the model treatment for BCT based on a finding that 76 percent of WTPs surveyed had used this technology for wastewater treatment. Analysis of 76 individual NPDES permits for WTPs determined that limitations of 30 mg/L and 45 mg/L were representative of current permitting practice for average monthly and daily maximum TSS limits, respectively. And, analysis of monitoring data for sedimentation lagoons within the industry resulted in calculation of 95th percent occurrence (monthly average) and 99th percent occurrence (daily maximum) levels of treatment of 28.1 mg/L and 44.4 mg/L, respectively. These levels of treatment performance were considered Best Practicable Technology Currently Available (BPT), and subsequent analysis determined that BPT was equal to BCT. The study identified 30 mg/l and 45 mg/L to be the monthly average and daily maximum TSS limits for a model NPDES permit.

The Snake River – Hells Canyon TMDL includes a WLA for TSS for the Weiser WTP of 50 mg/L (monthly average). Because this WLA is less stringent than the technology-based limit, the technology-based limit applies.

Aluminum

There are no applicable technology-based guidelines or State water quality criteria for aluminum. To evaluate the need for effluent limitations for aluminum, EPA has considered the EPA National Recommended Water Quality Criteria, 2002 (EPA-822-R-02-047), which recommends maximum concentrations of 87 µg/L and 750 µg/L as acute and chronic concentrations for the protection of freshwater aquatic life. IDEQ has also established a narrative water quality

criterion for toxic substances, which states that surface waters of the State must be free of toxic substances in concentrations that impair designated beneficial uses.

Although a review of the literature regarding water treatment plant residuals suggests that aluminum concentrations in water treatment plant residuals can be elevated, particularly when aluminum salts are used to enhance coagulation, no data is available for a determination of reasonable potential for plants in Idaho. Therefore, the draft permits do not include effluent limitations for aluminum, but does require monitoring. This monitoring is limited to those facilities which use alum in the treatment process. This information will be used to conduct reasonable potential analysis for aluminum during development of the next permit.

Metals

There are no applicable technology-based limits for metals. IDEQ, however, has established applicable water quality criteria. In addition, IDEQ has established a narrative water quality criterion for toxic substances, which states that surface waters of the State must be free of toxic substances in concentrations that impair designated beneficial uses.

A review of the literature regarding water treatment plant residuals suggests that metals may be present in present in discharges from water treatment plants. In developing limitations and conditions for the permits, however, EPA did not have specific data available to determine if these pollutants may cause or contribute to a water quality standard violation. Therefore, the draft permits require effluent sampling for metals during the first two years of the permit cycle. The metal analysis will be for compounds 1 to 13 of the National Toxics Rule at 40 CFR § 131.36. These include: antimony, arsenic, beryllium, cadmium, chromium (III and VI), copper, lead, mercury, nickel, selenium, silver, thallium, and zinc. These data will be used to determine if additional limits are needed for the effluent discharge for the next permit.

Appendix B Water Quality-Based Effluent Limits Calculations

This appendix describes the process EPA uses to conduct reasonable potential analysis and calculate WQBELs. The permits include WQBELs for chlorine.

Step 1. Conduct Reasonable Potential

To determine if there is "reasonable potential" to cause or contribute to an exceedence of the water quality criteria for a given pollutant, EPA compares applicable water quality criteria to the maximum projected downstream concentrations for a particular pollutant, C_d. If the projected downstream concentration exceeds the criteria, there is "reasonable potential" and a WQBEL must be included in the permit.

The maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_dQ_d = C_eQ_e + C_uQ_u \qquad \text{(Equation B-1)}$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$
Q_e = Effluent design flow rate
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_eQ_e + C_uQ_u}{Q_e + Q_u} \qquad \text{(Equation B-2)}$$

The above form of the equation is based on the assumption that 100% of the receiving water is available for mixing. If only a fraction of the receiving water is available, the equation becomes:

$$C_d = \frac{C_eQ_e + C_u(Q_u \times MZ)}{Q_e + (Q_u \times MZ)} \qquad \text{(Equation B-3)}$$

where MZ is the fraction of the receiving water flow available for dilution.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \qquad \text{(Equation B-4)}$$

Equation B-2 can be simplified by introducing a "dilution factor,"

$$D = \frac{Q_e + (Q_u \times MZ)}{Q_e} \qquad \text{(Equation B-5)}$$

After the dilution factor simplification, Equation B-2 becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{(Equation B-6)}$$

Equation B-6 is the form of the mass balance equation used to determine reasonable potential and calculate wasteload allocations.

Because of the common use of chlorine for disinfection in water treatment plants, EPA has determined that there is reasonable potential for wastewater discharges from water treatment plants to cause an exceedance of the numeric State water quality criteria for chlorine.

Step 2. Calculate Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the mass balance equation used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis (Equations B-6). To calculate the wasteload allocation, the receiving water concentration downstream of the effluent discharge (C_d) is set equal to the acute or chronic criterion and the equation is solved for C_e. The calculated value of C_e, becomes the acute or chronic WLA (i.e. WLA_a or WLA_c). Equation B-6 is rearranged to solve for the WLA:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{(Equation B-7)}$$

Step 3. Determine long-term average concentrations.

WLAs are converted to long term average concentrations (LTAs). For each WLA based on an aquatic life criterion, the acute and chronic LTAs are calculated using the following equations from the *TSD.*

$$LTA_a = WLA_a \times \exp(0.5\sigma^2 - z\sigma) \qquad \text{(Equation B-8)}$$
$$LTA_c = WLA_c \times \exp(0.5\sigma_4^2 - z\sigma_4) \qquad \text{(Equation B-9)}$$

where,

$\sigma^2 = \ln [CV^2 + 1]$

$\sigma_4^2 = \ln [CV^2/4 + 1]$

$z = 2.326$ for the 99^{th} percentile occurrence probability

CV = coefficient of variation (here, because there are less than 10 data points, the CV is set equal to 0.6, the recommended default value)

$\sigma^2 = \ln [CV^2 + 1]$

The LTAs are compared, and the more stringent is used to develop the daily maximum and monthly average permit limits.

Step 4. Derive the maximum daily (MDL) and average monthly (AML) permit limits.

Using equations from the *TSD*, the MDL and the AML are calculated as follows.

$MDL = LTA \times e^{[z\,\sigma - 0.5\,\sigma 2]}$ (Equation B-10)

where,

$\sigma^2 = \ln [CV^2 + 1]$

$z = 2.326$ for the 99^{th} percentile probability basis

CV = coefficient of variation (here, because there are less than 10 data points, the CV is set equal to 0.6, *i.e.* the recommended default value of the *TSD*)

and,

$AML = LTA \times e^{[z\,\sigma_n - 0.5\,\sigma_n 2]}$ (Equation B-11)

where,

$\sigma_n^2 = \ln [CV^2 / n + 1]$

$z = 1.645$ for the 95^{th} percentile probability basis

CV = coefficient of variation = 0.6

n = number of sampling events required per month (here, n is set equal to 4, as recommended by the *TSD* whenever less than 4 samples per month are collected)

Table B- 1, below summarize the results of the WQBEL calculations for chlorine assuming no mixing zone is available.

Table B- 1 Results of Chlorine WQBEL Assuming no Mixing Zone

Water Quality Criterion	**Acute**	0.019µg/L
	Chronic	0.011 µg/L
Waste Load Allocation (WLA)	**Acute**	0.019µg/L
	Chronic	0.011 µg/L
Long-term Average (LTA)	**Acute**	0.006
	Chronic	0.006
Maximum Daily Limit (MDL)		0.02 µg/L
Average Monthly Limit (AML)		0.01 µg/L

Dilution Factor Calculation

The Idaho *Water Quality Standards* at IDAPA 58.01.02.060 allow twenty-five percent (25%) of the receiving water to be used for dilution for aquatic life criteria. The flows used to evaluate compliance with the criteria are:

- The 1 day, 10 year low flow (1Q10). This flow is used to protect aquatic life from acute effects. It represents the lowest daily flow that is expected to occur once in 10 years.

- The 7 day, 10 year low flow (7Q10). This flow is used to protect aquatic life from chronic effects. It the lowest 7 day average flow expected to occur once in 10 years.

In accordance with state water quality standards, only the Idaho Department of Environmental Quality may authorize mixing zones. The reasonable potential calculations are based on an assumed mixing zone of 25% for aquatic life. If the State does not authorize a mixing zone in its 401 certification, the permit limits will be re-calculated to ensure compliance with the standards at the point of discharge.

Appendix C Existing Conventional Filtration Dischargers

Table D - 1 System Information

System name	NPDES Permit Number	Outfall		Effluent Design Flow, Qe, (gpd)	Calculated Dilution Factor	
		Latitude	Longitude		Acute	Chronic
City of Bonners Ferry WTP	ID-0020451	48° 41’ 44”	116° 18’ 13”	30,000	25,529	25,529
City of Sandpoint Sand Creek WTP	ID-0024350	48° 1’ 13”	116° 34’ 14”	77,950	1	1
Laclede Water District WTP	ID-0027944	48° 9’ 41”	116° 45’ 14”	40,000	14,057	18,864
City of Lewiston WTP	ID-0026531	46° 25’ 15”	116° 59’ 24”	550,000	386	471
City of Pierce WTP	ID-0020893	46° 29’ 43”	115° 47’ 49”	36,000	1	1
City of Orofino WTP	ID-0001058	46° 28’ 26”	116° 15’ 8”	39,000	2,445	3,195
Riverside Independent Water District WTP	ID-0021237	46° 29’ 36”	116° 17’ 12”	68,000	1,403	1,833
City of Weiser WTP	ID-0001155	44° 14’ 22”	116° 58’ 16”	185,000	3,896	3,896
Wilderness Ranch Water WTP	ID-0028312	43° 54’ 14”	115° 59’ 18”	20,000	80	86

Table D - 2 Receiving Water Information

System name	Receiving Water	Hydrologic Unit Code (HUC)	Tribal Waters	Beneficial Uses	7Q10 Receiving Water (cfs) and Info. Source	Impairment and TMDL Status
City of Bonners Ferry WTP	Kootenai River	17010104 P-29	No	cold, ss, pcr, dws, srw	3,160 USGS 12310100 USGS 12305000	Temperature No TMDL
City of Sandpoint Sand Creek WTP	Little Sand Creek	17010214 P-53	No	cold, pcr	not available	Pend Oreille River: sediment, temperature, total dissolved gas No TMDL
Laclede Water District WTP	Pend Oreille River	17010214 P-2	No	cold, pcr, dws	4,857 USGS 2395500	Pend Oreille River: sediment, temperature, total dissolved gas No TMDL
City of Lewiston WTP	Clearwater River	17060306 C-1	No	cold, pcr, dws	1,600 USGS 3342500	Not Listed
City of Pierce WTP	Canal Creek	17060306	No	cold, pcr	Not available	Not Listed
City of Orofino WTP	Clearwater River	17060306 C21	Yes – Nez Perce Reservation	cold, ss, pcr, dws, srw	771 USGS 3340000	Not Listed
Riverside Independent Water District WTP	Clearwater River	17060306 C21	Yes – Nez Perce Reservation	cold, ss, pcr, dws, srw	771 USGS 3340000	Not Listed
City of Weiser WTP	Snake River	1705115 SW-1	No	cold, pcr, dws	4,460 Snake River – Hells Canyon TMDL	Nutrients, TSS TMDL Complete
Wilderness Ranch Water WTP	Mores Creek	17050112 SW-9	No	cold, ss, pcr, dws, srw (Lucky Peak Res.)	10.5 USGS 13200000	Temperature no TMDL
Beneficial uses: cold = cold water aquatic life, ss = salmonid spawning, pcr = primary contact recreation, dws = drinking water source, srw = special resource water						

Table D - 3 Chlorine and TSS Limits

System name	Total Chlorine Residual				TSS			
	Concentration (mg/L)		Loading (lbs/day)		Concentration (mg/L)		Loading (lbs/day)	
	AML	MDL	AML	MDL	AML	MDL	AML	MDL
City of Bonners Ferry WTP	0.3	0.5	0.075	0.13	30	45	7.5	11.3
City of Sandpoint Sand Creek WTP	0.01	0.02	0.007	0.013	30	45	20	29
Laclede Water District WTP	0.3	0.5	0.10	0.17	30	45	10	15
City of Lewiston WTP	0.3	0.5	1.4	2.3	30	45	138	206
City of Pierce WTP	0.01	0.02	0.003	0.006	30	45	9.0	13.5
City of Orofino WTP	0.3	0.5	0.098	0.16	30	45	10	15
Riverside Independent Water District WTP	0.3	0.5	0.17	0.28	30	45	17	26
City of Weiser WTP	0.3	0.5	0.46	0.77	30	45	46	69
Wilderness Ranch Water WTP	0.3	0.5	0.050	0.083	30	45	5.0	7.5

AML = Average Monthly Limit
MDL = Maximum Daily Limit

Appendix D Summary of Biological Evaluation

A. Introduction

In consultation with the National Oceanic and Atmospheric Administration - Fisheries and the U.S. Fish and Wildlife Service, 29 Evolutionarily Significant Units (ESU)/Distinct Population Segments (DPS) have been identified for consideration in this BE. Table E - 1 lists these species, their current status, and the Federal Register (FR) final rule notice for each species.

Table E - 1 Summary of Listed and Candidate Species under ESA within the State of Idaho

Species	DPS/ESU	Present Status	Federal Register Notice	
Mammals				
Rocky Mountain Gray Wolf *(Canis lupus)*	Rocky Mountain Gray Wolf	Endangered	43 FR 9612	03/09/78
Grizzly Bear *(Ursus arctos)*	Grizzly Bear	Threatened	40 FR 31736	07/28/75
Canada Lynx *(Lynx canadensis)*	Canada Lynx	Threatened	65 FR 16052	03/24/00
Northern Idaho Ground Squirrel *(Spermophilus brunneus brunneus)*	Northern Idaho Ground Squirrel	Threatened	65 FR 17779	04/05/00
Selkirk Mountains Woodland Caribou *(Rangifer tarandus caribou)*	Selkirk Mountains Woodland Caribou	Endangered	49 FR7394	02/29/84
Southern Idaho Ground Squirrel *(Spermophilus brunneus endemicus)*	Southern Idaho Ground Squirrel	Candidate	66 FR 54807	10/30/01
Birds				
Bald Eagle *(Haliaeetus leucocephalus*)	Bald Eagle	Threatened	60 FR 36010	07/12/95
Whooping Crane *(Grus americana)*	Whooping Crane	Experimental Non-essential	62 FR 38939	07/21/97
Yellow-billed Cuckoo *(Coccyzus americanus)*	Yellow-billed Cuckoo Western DPS	Candidate	66 FR 54807	10/30/01
Amphibians				
Columbia Spotted Frog (*Rana luteiventril)*	Great Basin DPS	Candidate	57 FR 59257	12/14/92
Fish				
Bull Trout *(Salvelinus confluentus)*	Columbia & Klamath River Jarbridge River Coastal-Puget Sound and St. Mary-Belly Rivers	Threatened Threatened Threatened	63 FR 31647 64 FR 17110 63 FR 58910	07/10/98 04/08/99 11/01/99
Chinook Salmon *(Oncorhynchus tshawytscha)*	Snake River Fall Run Snake River Spring/Summer Run	Threatened Threatened	57 FR 14653 57 FR 14653	04/22/92 04/22/92
Sockeye Salmon *(O. nerka)*	Snake River	Endangered	62 FR 43937	08/18/97
Steelhead Trout *(O. mykiss)*	Snake River Basin	Threatened	62 FR 43937	08/18/97
White Sturgeon *(Acipenser transmontanus)*	Kootenai River Population	Endangered	59 FR 46002	09/06/94
Invertebrates				

Species	DPS/ESU	Present Status	Federal Register Notice	
Banbury Springs Lanx *(Lanx sp.)*	Banbury Springs Lanx	Endangered	57 FR 59257	12/14/92
Bliss Rapids Snail *(Taylorconcha serpenticola)*	Bliss Rapids Snail	Threatened	57 FR 59244	12/14/92
Bruneau Hot Springsnail *(Pyrgulopsis bruneauensis)*	Bruneau Hot Springsnail	Endangered	63FR 32981	06/17/98
Idaho Springsnail *(Fontelicella idahoensis)*	Idaho Springsnail	Endangered	57 FR 59257	12/14/92
Snake River Physa Snail *(Physa natricina)*	Snake River Physa Snail	Endangered	57 FR 59257	12/14/92
Utah Valvata Snail *(Valvata utahensis)*	Utah Valvata Snail	Endangered	57 FR 59257	12/14/92
Plants				
Howell's Spectacular Thelypody *(Thelypidium howelli ssp. spaldingii)*	Howell's Spectacular Thelypody	Threatened	64 FR 28393	05/12/99
MacFarlane's Four-o'clock *(Mirabilis macfarlanei)*	MacFarlane's Four-o'clock	Threatened	60 FR 10697	03/15/96
Spalding's catchfly *(Silene spaldingii)*	Spalding's Catchfly	Threatened	66 FR 51598	10/10/01
Ute Ladies' Tresses *(Spiranthes diluvialis)*	Ute Ladies' Tresses	Threatened	57 FR 2053	01/17/92
Water Howellia *(Howellia aquatilis)*	Water Howellia	Threatened	59 FR 35864	07/14/94
Christ's Paintbrush *(Castilleja christii)*	Christ's Paintbrush	Candidate	64 FR 57533	10/25/99
Slender Moonwort *(Botrychium lineare)*	Slender Moonwort	Candidate	66 FR 30368	06/06/01
Slickspot Peppergrass *(Lepidium papilliferum)*	Slickspot Peppergrass	Candidate	64 FR 57534	10/25/99

B. Analysis of Effects

The ESA Section 7 implementing regulations (50 CFR § 402.02) define "effects of the action" as:

> The direct and indirect effects of an action on the species or critical habitat together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR § 402.02).

For the USEPA proposed action there are no direct effects or consequence to proposed or listed species, that is, issuance of the proposed permits in and of itself will not change the environmental baseline or directly affect listed or proposed species. However, there are potential significant indirect effects of issuing the proposed permits, because the approval allows implementation of the proposed permit.

This BE concentrates on the protective measures afforded by the proposed permit. It is important to understand that the permits do not authorize noncompliance. Although it is possible that there may be situations where permittees are not in compliance with the permit, such situations are not authorized and not addressed in this BE. The analysis of effects in the BE assumes compliance with the proposed permits and that the species of interest are exposed to waters meeting water quality standards, and examines what the likely effects on the species would be under that scenario.

There are three possible determinations of effects under the ESA (USFWS and NMFS 1998). The determinations and their definitions are:

- **No Effect (NE)** - the appropriate conclusion when the action agency determines its proposed action will not affect listed species or critical habitat.

- **May affect, is not likely to adversely affect (NLAA)** - the appropriate conclusion when effects on listed species are expected to be discountable, or insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

- **May affect, likely to adversely affect (LAA)** - the appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial (see definition of “is not likely to adversely affect”). In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects, then the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires formal section 7 consultation.

For the purposes of Section 7 of the ESA, any action that is reasonably certain to result in “take” is likely to adversely affect a proposed or listed species. The ESA (Section 3) defines “take” as “to harass, harm, pursue, hunt, shoot, wound, trap, kill, capture, collect or attempt to engage in any such conduct.” Further, the term “harass” is defined as “an intentional or negligent act that creates the likelihood of injuring wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, or sheltering” (50 CFR § 17.3). NOAA Fisheries has interpreted “harm” as “an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, feeding, or sheltering” (64 FR 60727). The USFWS (1994) further defines “harm” as “significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.”

The analysis of effects of the proposed actions assumes that the species of interest are exposed to waters meeting the water quality standards. There are waters in the state of Idaho that currently do not meet the standards for one or more parameters. It is believed that implementation of the proposed permits may assist in changing some of these current conditions. However, the only action under consideration at this time is whether the EPA’s proposed action will adversely affect species of interest.

Mammals
The mammalian species addressed in this BE occur in a variety of habitats throughout Idaho. Habitat destruction and/or over hunting are important causes of decline for these species. The proposed permits do not regulate the primary activities threatening these species. However, the proposed permits do protect water quality, so it may have an overall beneficial effect on water quality in the state of Idaho.

The mammalian species under consideration in this BE have specialized habitat needs with habitats located in remote areas, such as the Selkirk Mountains for the woodland caribou. No existing WTPs are located in these areas and the potential for future WTPs to locate in these habitats is negligible. Thus, the effects determination for the mammalian species under consideration is that the proposed WTPs permits will have:

> **No effect** on rocky mountain gray wolf, grizzly bear, Canada lynx, northern Idaho ground squirrel, Selkirk Mountains woodland caribou, or southern Idaho ground squirrel.

Birds
The avian species addressed in this BE occur in a variety of habitats throughout Idaho. Habitat destruction, over hunting, and pesticide pollution are important causes of decline for these species. The proposed permits do not regulate the primary activities threatening these species. However, the proposed permits do protect water quality, so it may have an overall beneficial effect on water quality in the state of Idaho.

Some of the avian species under consideration in this BE, such as the whooping crane, have specialized habitats needs, with some habitats located in remote areas. It is possible that habitats used by some of these species, particularly the bald eagle and yellow-billed cuckoo, could overlap with areas where existing WTPs are located. There is also the potential for future WTPs to locate in areas overlapping habitats used by the avian species under consideration. Because the proposed permits will protect water quality, it may have an overall beneficial effect on some of the species. Thus, the effects determination for the avian species under consideration is that the proposed WTP permits:

> **May affect, but is not likely to adversely affect** bald eagle, whooping crane, or yellow-billed cuckoo.

Amphibians
The only amphibian species under consideration is the spotted frog, a candidate species under the ESA. In Idaho, it occurs in the mid-elevations of the Owyhee uplands and in southern Twin Falls County. Threats to the Great Basin population of Columbia spotted frogs include grazing, spring development, road and trail construction, water diversion, fire in riparian corridors, pesticides, disease, and the introduction of non-native fish. The proposed WTP permits do not regulate the primary activities threatening this species. However, the proposed permits do protect water quality, so it may have an overall beneficial effect on water quality in the state of Idaho.

It is unlikely that existing or future WTPs would occur in habitats used by the Columbia Basin population of spotted frogs. However, in the event that WTPs occurred upstream of areas used by this species, the expected beneficial effects of the proposed permits could affect these habitats. Therefore, the effects determination for the Columbia Basin population of spotted frogs is:

> **May affect, but is not likely to adversely affect** the Columbia Basin population of spotted frogs.

Fish

Reduced water quality is one of the factors of decline for the fish species under consideration in this BE. The proposed permits for WTPs are expected to have a beneficial effect on water quality and thereby should also have a beneficial effect on listed fish species. While water quality directly affects fish health and survival, for the species under consideration, habitat loss, hydropower projects (dams), and over harvesting are also major contributors to species decline. For some species, predation by, competition with, and interbreeding with exotic species are also major contributors to species decline.
If existing or future WTPs are located adjacent to or near surface waters hosting listed fish species, it is believed that the proposed permits will benefit the water quality of such waters, therefore, the effects determination for listed fish species is:

> **May affect, but is not likely to adversely affect** Snake River fall run Chinook salmon, Snake River spring/summer run Chinook salmon, Snake River sockeye salmon, Snake River steelhead trout, or Kootenai River white sturgeon.

Invertebrates

Reduced water quality is one of the factors of decline for the invertebrate species under consideration in this BE. The proposed permits for WTPs are expected to have a beneficial effect on water quality and thereby should also have a beneficial effect on listed invertebrate species. While water quality directly affects aquatic invertebrate health and survival, for the species under consideration, habitat loss and hydropower projects (dams) are also major contributors to species decline.

If existing or future WTPs are located adjacent to or near surface waters hosting listed invertebrate species, it is believed that the proposed permits will benefit the water quality of such waters. Therefore, the effects determination for listed and candidate invertebrate species is:

> **May affect, but is not likely to adversely affect** Banbury springs lanx, Bliss Rapids snail, Bruneau Hot Springsnail, Idaho Springsnail, Snake River physa snail, or Utah valvata snail.

Plants

Although a few plant species under consideration are associated with wetland habitats (e.g., water Howellia and Ute ladies'-tresses), most of the plants under consideration in this BE occur in dry-land habitat and would not be impacted by the proposed permits. Common threats to the listed and candidate plants species include livestock grazing, trampling, loss or changes in habitat resulting from land use (i.e. agriculture and urban development), hydrological alterations, herbicide spraying, and recreational activities (e.g., off-road vehicles and trampling), in addition to natural and man-made disturbances (e.g., landslides, floods, highway construction). For the species associated with wetland areas, water quality was not listed as a major reason for the species' decline. However, because the proposed permits are expected to improve water quality, the proposed action may have a positive impact on listed wetland species. Thus, the effects determination for water Howellia and Ute ladies'-tresses is:

> **May affect, but is not likely to adversely affect** water Howellia or Ute ladies'-tresses**.**

The effects determination for the remainder of the listed and candidate plant species under consideration in this BE is:

> **No effect** on Howell's spectacular thelypody, MacFarlane's four-o'clock, Spalding's catchfly, Christ's paintbrush, slender moonwort, or slickspot peppergrass.

Cumulative Effects and Interdependent/Interrelated Actions

Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions on endangered or threatened species or critical habitat that are reasonably certain to occur in the action area considered in this biological assessment. Future federal actions or actions on federal lands that are not related to the proposed action are not considered in this section.

Future anticipated nonfederal actions that may occur in or near surface waters in the state of Idaho include timber harvest, grazing, mining, agriculture, urban development, municipal and industrial wastewater discharges, road building, sand and gravel operations, introduction of nonnative fishes, off-road vehicle use, fishing, hiking, and camping. These nonfederal actions are likely to continue having adverse effects on the endangered and threatened species, and their habitat.

There are also nonfederal actions likely to occur in or near surface waters in the state of Idaho that are likely to have beneficial effects on the endangered and threatened species. These include implementation of riparian improvement measures, best management practices associated with timber harvest, grazing, agricultural activities, urban development, road building and abandonment, recreational activities, and other nonpoint source pollution controls.

Interdependent/Interrelated Actions

Interdependent actions are defined as actions with no independent use apart from the proposed action. Interrelated actions include those that are part of a larger action and depend on the larger action for justification. No interdependent/interrelated actions are expected to result from the proposed permits for WTPs in the state of Idaho.

Summary of Effects Determinations

Effects determinations for the listed and candidate species discussed in this BE are summarized in Table E - 2.

Table E - 2 Summary of Effects Determinations

Species	Effects Determinations		
	NE	NLAA	LAA
Mammals			
Rocky Mountain Gray Wolf	X		
Grizzly Bear	X		
Canada Lynx	X		
Northern Idaho Ground Squirrel	X		
Selkirk Mountains Woodland Caribou	X		
Southern Idaho Ground Squirrel	X		
Birds			
Bald Eagle		X	
Whooping Crane		X	
Yellow-billed Cuckoo		X	
Amphibians			
Columbia Spotted Frog		X	
Fish			
Bull Trout		X	
Chinook Salmon		X	
Sockeye Salmon		X	

Species	Effects Determinations		
	NE	NLAA	LAA
Steelhead Trout		X	
White Sturgeon		X	
Invertebrates			
Banbury Springs Lanx		X	
Bliss Rapids Snail		X	
Bruneau Hot Springsnail		X	
Idaho Springsnail		X	
Snake River Physa Snail		X	
Utah Valvata Snail		X	
Plants			
Howell's Spectacular Thelypody	X		
MacFarlane's Four-o'clock	X		
Spalding's catchfly	X		
Ute Ladies' Tresses		X	
Water Howellia		X	
Christ's Paintbrush	X		
Slender Moonwort	X		
Slickspot Peppergrass	X		

Appendix E TMDL WLAs for Weiser WTP

Background

A TMDL for the Snake River – Hells Canyon watershed was approved by EPA in September, 2004. The TMDL may be downloaded from the following Internet address:

http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/snake_river_hells_canyon/snake_river_hells_canyon.cfm

The TMDL provided the following WLAs for the Weiser WTP:

Weiser WTP WLA from Snake River – Hells Canyon TMDL	
Total Phosphorus	Concentration = 3.5 mg/L WLA = 5.5 kg/day
TSS	WLA = 50 mg/L monthly average

Phosphorus

The NPDES regulations at 40 CFR 122.45(d) require that all permit limits be expressed, unless impracticable, as both average monthly limits (AMLs) and maximum daily limits (MDLs) for all discharges other than publicly owned treatment works (POTWs). The objective in setting effluent limits is to establish limits that will result in the effluent meeting the wasteload allocation (WLA) under normal operating conditions virtually all the time. While not possible to guarantee, through permit limits, that a WLA will never be exceeded, it is possible to use procedures which can account for extreme values. Permit limits can be established that will have low statistical probability of exceeding the WLA and will achieve the desired loading. The statistical procedures used by EPA to determine effluent limitations are described in the Technical Support Document for Water Quality-based Toxics Control (EPA March 1991). EPA followed the statistical procedures of the *TSD* in developing the AML and MDL for phosphorus based on the TMDL WLA.

Permit limits were calculated by setting the maximum daily limit (MDL) equal to the WLA and calculating the average monthly limits (AML) from the following relationship from the *TSD*:

$$\frac{MDL}{AML} = \frac{\exp(z_m\sigma - 0.5\sigma^2)}{\exp(z_a\sigma_n - 0.5\sigma_n^2)}$$

Where:

CV = Coefficient of variation = 0.6

$\sigma^2 = \ln(CV^2 + 1) = 0.307$

$\sigma_n^2 = \ln(CV^2/n + 1) = 0.0862$

n = number of sampling events per month (minimum of 4 samples assumed if sample frequency is less than 4 per month)

z_m = 2.326 for 99th percentile probability basis
z_a = 1.645 for 95th percentile probability basis

This yields an MDL to AML ratio of 2.01.

Therefore:

MDL = 5.5 kg/day (12 lbs/day)
AML = 5.5 ÷ 2 = 2.75 kg/day (6.1 lbs/day)

In terms of concentration:

MDL = 3.5 mg/L
AML = 3.5 mg/L ÷ 2 = 1.75 mg/L

It is unlikely that the WTP will any impact on phosphorus loading to the Snake River, because the facility does not add phosphorus as part of the treatment process. The only phosphorus being discharged in the wastestream, is from the source water (i.e. the Weiser River and Snake River). Therefore monitoring for phosphorus is limited to once per year. The sample must be taken during the month of July, since the TMDL is seasonal (May through September).

TSS

The Snake River – Hells Canyon TMDL includes a WLA for TSS for the Weiser WTP of 50 mg/L (monthly average). Because this WLA is less stringent than the technology-based limit established for the permits , the technology-based limit applies.